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IS IT TIME FOR A JOINT FORCE SPACE COMPONENT COMMANDER?

by

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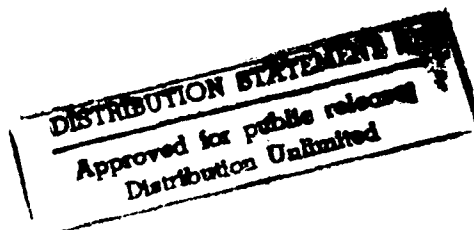
A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: Henry D. Baird, Jr.

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Abstract of

IS IT TIME FOR A JOINT FORCE SPACE COMPONENT COMMANDER?

This paper investigates the timeliness and utility of designating a Joint Force Space Component Commander (JFSCC) to coordinate Force Enhancement space forces for the Joint Force Commander (JFC). This position is akin to the Joint Force Air Component Commander that proved so valuable in the recent Gulf War. It is asserted that the JFSCC would prove valuable to the JFC in receiving the requirements from the other subordinate commanders and prioritizing and allocating those space assets to the forces. The use of Space Control and Force Application space forces are not covered in this paper. Doctrinal justifications are explored to determine if a JFSCC is specifically restricted or if one could be designated. The forces that a JFSCC would coordinate are then explained and how the JFSCC would help in their use. Finally, the lessons learned from recent operations and the war in the Gulf are highlighted to show how important those space assets were and how a JFSCC could have made a difference. It is concluded that a JFSCC is appropriate and timely and should be used when necessary. The Commanders in Chief should be educated as to the possible use of a JFSCC to manage space forces.

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Background

The role of the Joint Forces Air Component Commander (JFACC) in Desert Shield/Storm has been trumpeted in various magazines, papers, and scholarly works. Lieutenant General Horner's abilities as the single air component commander in charge of the air forces arrayed in that conflict have been well documented and were instrumental in the extremely successful air campaign. But what of the space forces that were also instrumental in that conflict? What about the space communications that made transmittal of those Air Tasking Orders and command and control (C²) possible in the great quantity that was desired. And how about the ease with which the forces navigated about the featureless desert with the aid of the Global Positioning System (GPS) satellites? Who was the overall commander of these space assets that were as instrumental to the success of the Desert Shield/Storm war as any of the ground, naval, and air forces? They did not occupy any land or water areas and they certainly didn't gain air superiority but the coalition did have space superiority. This paper explores the possibility of creating the position of a Joint Force Space Component Commander (JFSCC) or "Jifsic". First, the doctrinal justification will be explored to determine if there is any reason not to have a JFSCC. Then, the forces that a JFSCC would coordinate or "command" in a global conflict or war scenario will be considered. And finally, some lessons learned from past conflicts, including Desert Shield/Storm, will be highlighted to show how a JFSCC could have alleviated some of the difficulties encountered in those conflicts.

Doctrinal Justification

Is there a reason that a JFSCC has not been created in the past or have the Commanders in Chief (CINCs) not been aware of the tremendous help

that space systems provide to the war-fighting commander. They are aware of how important coordinating those assets must be especially in a situation in which conflicts are going on in more than one location or in a global arena. What guidance is there to determine whether a JFSCC should exist?

The National Space Policy, our nation's highest guidance, delineates for the Department of Defense (DoD) guidelines in the national security space sector. The missions which it assigns the DoD are Space Support, Force Enhancement, Space Control, and Force Application. Space Support is the logistical backbone of the DoD space program. Until the Congress decides to allow means for performing the Space Control and Force Application missions, a JFSCC will be involved in only the Force Enhancement mission. Nowhere does it say how the nation's national security space assets should be controlled or commanded. It does say under the Force Enhancement area that the National Security space sector, "will develop, operate, and maintain space systems and develop plans and architecture to meet the requirements of operational land, sea, and air forces through all levels of conflict commensurate with their intended use."¹

The DoD's Space Policy predates the National Space Policy but calls out the same four mission areas. "Space is recognized as being a medium within which the conduct of military operations in support of our national security can take place, just as on land, at sea, and in the atmosphere, and similarly from which military space functions of space support, force enhancement, space control and force application can be performed."² It is interesting to note here the distinction being made as to the unique nature of the space medium from that of the land, sea, and air.

United States Space Command's Doctrine for Space Control Forces uses the application of warfare principles to explain how space control forces should be used. Under the principle of unity of command, it explains that since satellites in space "are global military assets that overfly most potential battlefields to provide combat support. Satellites will be used in conflict to locate and target enemy forces; to warn of attack; and to provide communications, weather, and navigation support."³ Although it continues to aim primarily at space control forces (anti-satellites), it continues to say that space systems "must be under the combatant command of a single space commander, USCINCSpace, in order to ensure unity of effort against the enemy's global space order of battle. The space commander needs to see the entire space picture: enemy, friendly, and neutral space systems."⁴ It is plain that the USCINCSpace believes wholeheartedly in centralized control and decentralized execution but has this problem been thought out to the level of a Joint Force Commander (JFC) in a theater of operations? Is there a need for a lower level commander of space forces that could relay the needs of his JFC and the other subordinate commanders to the USCINCSpace?

"The purpose of the Joint Publication System (JPS) is to enhance the combat effectiveness of U.S. forces."⁵ This system "Turnishes principles, guidelines, and the conceptual framework to initiate, validate, develop, coordinate, evaluate, approve, and maintain joint doctrine and Joint Tactics Techniques and Procedures (JTTP) for joint activities of the Armed Forces."⁶ In essence, the JPS tells the CINCs everything they need to know in order to fight a multi-armed force war. From these publications, the justification for a JFSCC might be determined.

The 0 Series of the JPS is the CAPSTONE Joint Warfare Doctrine that "links joint doctrine to national strategy".⁷ From the proposed final pub, JCS

Pub 0-1, Chapter IV on Joint and Combined Warfare, Section C, The Operational Level of War, Organizational Concept:

"Joint force commanders (JFCs) devise their operational and logistic concepts to reflect functional and/or area-oriented tasks for assignment to their Service components in accordance with their combatant functions and capabilities. Where a task goes beyond the functional capabilities of any one component, the joint force commander then creates a subordinate joint force oriented on that specific task."⁸

This overarching document clearly instructs the CINCs to organize their forces in a manner that allows control and coordination of the various forces even though those forces spread across the service components. Also in this publication, the four tasks of the nation's space forces are delineated:

"Space control (combat against enemy forces in space and their infrastructure), force application (combat against enemy land, sea, air, and missile forces), force enhancement (support for land, sea, and air forces), and space support (launch capability)."⁹

This last section is taken from National Military Strategy, Chapter III, Section A, Military Power and Posture, and describes the major components of our nation's military posture. Once again, it is evident that space forces comprise an important part of the forces available to the Joint Force Commander. JCS Pub 0-2 "sets forth the principles and doctrines governing the activities of the Armed Forces of the United States when two or more Services are operating together."¹⁰ In Chapter 3, Section II, Command Organization, this publication describes the organization of the Joint Force Commander's forces. It advises him to organize his forces along three basic lines: Area Basis, Functional Basis, and Service Function. Which of these three organizational

structures to choose is up to the Joint Force Commander and is based primarily on the:

- (1) "Manner in which the commander decides to fulfill the mission.
- (2) Characteristics and Service identity of the forces assigned."¹¹

The functional basis organization is the paradigm upon which this paper is based and the one in which space forces attain an equal status with that of the other services. This is not to imply that the other organizational models would preclude the need for a JFSCC. In terms of the JFC's organization of forces, the UNAAF document directs:

"... each commander will organize assigned forces so as best to perform the mission. The organizational form of forces will depend on the mission assigned, the manner in which the mission is to be fulfilled, the capabilities and strength of the component elements of the forces assigned, and the phasing of the contemplated operation."¹²

It is in the best interests of the JFC to organize his forces to use their inherent strengths and synergistic abilities for the most efficient prosecution of the mission. Nothing in this level of joint documentation would prevent the JFC from organizing his subordinate commanders to include a JFSCC.

Moving down another layer in the JPS, the 3 Series documents, Joint Operations, "establishes the joint doctrine, tactics, techniques, and procedures for directing, planning, and executing joint military operations."¹³ These documents are tailored for each mission or doctrinal area that a warfighting commander might encounter. For instance, "Joint Pub 3-01.1, *Joint Doctrine for the Defense of the United States Against Air Attack*, gives basic guidance to elements of the Air Force, Army, Navy, and Marine Corps engaged in

planning and conducting the air defense of the United States as prescribed in UNAAF.¹⁴ Where is the publication on Joint Doctrine for the Use of Space to Defend the United States and Joint Doctrine for Theater Space Operations?

There exists no doctrinal reason to prevent a JFSCC being assigned to support a JFC. The most obvious counter argument to a JFSCC is why do we need one at all? Couldn't we manage and coordinate the space assets needed for a conflict much as we did in the recent war in the gulf? Since it was accomplished there successfully, one would be hard pressed to justify saying no. The real question should be; Is that the smartest way to do it? One would have to say no. To paraphrase the US Space Command's doctrine, "Satellites have global presence, . . . (they) must be available for global use."¹⁵ Likewise, a theater commander needs someone who is space knowledgeable to sort out the various intra- and inter-theater space resource requirements and allocations from his component commanders and other regional CINCs.

If we allow that there is room for the Joint Force Commander to organize his command to allow a Joint Force Space Component Commander, what forces would that JFSCC coordinate, command, or control? The question of whether the JFSCC coordinates, commands, or controls those forces is an important one. Don't forget that space systems orbit the earth and are able to provide information to various theaters and users of the information. It is highly unlikely that the controllers of the National Intelligence Systems would allow the CINC to totally control those assets. Much like the Joint Force Air Component Commander, tasking the forces that own those assets would be on an as available basis with priority given to the user who needs it the most. This might be the Intelligence community if some other event is taking place in the world or the other theater commander of that second

regional conflict. "The space force commander will have the problem of orchestrating the space battle."¹⁶ Hopefully the other commander will have a JFSCC to coordinate his subordinate commander's requirements for space support.

Forces at the JFSCC's Command

The systems, or capabilities, that the JFSCC would coordinate in his force enhancement role run the gamut of communications, navigation, weather, and intelligence and warning.

The types of systems will be addressed along with the various coordination problems that could arise in the shared use of these systems and how a JFSCC could facilitate that process. These are only the force enhancement type of systems available to the JFSCC and don't address the space control assets which may be available to the future JFSCC. It would be equally important to have a JFSCC if space control and force application systems were available. These systems' most efficient use would need to be coordinated both intra- and inter-theater.

Communications - The ability of the JFC to communicate with his forces and the National Command Authority (NCA) are facilitated by various space communication systems. These can be both commercial and DoD space assets. This ability to communicate to his forces is of the highest importance to the operational commander and will be enhanced by various satellite systems. Air Force Space Command manages five military space communications programs: The Defense Satellite Communications System (DSCS), Fleet Satellite Communications System (FLTSATCOM), Air Force Satellite Communications System (AFSATCOM), and the Satellite Data System. A future communication system will be the Military Strategic Tactical and Relay (Milstar) satellites. Other commercial systems are usable in the case of

war but their use must be negotiated along with other worldwide users. "Communications satellites are of top rank in military significance. The Air Force estimates that about ninety percent of all US overseas military communications are now routed through space, in contrast to something like seventy-five percent only five years ago."¹⁷

DSCS is a worldwide satellite network providing secure voice and high data rate communications for DoD, US State Department, and other US government users. Phase II spacecraft have replaced the successful first generation satellites. The super high-frequency (SHF) capability of the DSCS II satellites are counted on for intercontinental communications and their assorted ultrahigh-frequency (UHF) capabilities for short-range intra-theater communications. Phase II spacecraft provide secure voice and data links for the Worldwide Military Command and Control System (WWMCCS). This system also supports "terminal deployments for contingencies; restoration of disrupted service overseas; presidential travel; global connectivity for the Diplomatic Telecommunications Service; and transmission to the continental United States of some surveillance, intelligence, and early warning data."¹⁸ Phase II satellites will be supplemented by more capable Phase III satellites in the future. These new systems will be more responsive to a variety of users both large and small. The Satellite Control Facility at Onizuka Air Force Station in Sunnyvale, California handles the communication capabilities and station keeping duties for the DSCS satellites through a worldwide network of SCF tracking stations. The DSCS III satellites are being designed so that their communications capabilities and positioning can be controlled through the Defense Information Systems Agency (DISA) using Satellite Configuration Control Elements (SCCE). This will give the JFSCC a more robust and surviving capability for using and maintaining the DSCS.

The Fleet Satellite Communications System (FLTSATCOM) is used for antijam UHF fleet broadcasting. It relieved the Navy of reliance on "high-frequency (HF) transmission for beyond-the-horizon communications"¹⁹ and provided an antijam capability not possible at HF. The Air Force and other DoD users employ this satellite system because of its worldwide availability.

"The space segment consists of four satellites in geosynchronous equatorial orbit. Each satellite has 23 communication channels in the ultrahigh and superhigh frequency bands. The Navy has exclusive use of 10 channels for communication among its land, sea, and air forces worldwide. The Air Force uses 12 others as part of its (AFSATCOM) system for command and control of nuclear capable forces. The satellite system has one 500 kilohertz channel allotted to the national command authority."²⁰

The Air Force Satellite Communications (AFSATCOM) System provides high-priority command, control, and communications for US strategic nuclear forces. This system is integrated onto other satellite payloads and is not a separate satellite by itself. The goal of the AFSATCOM system is to survive the massive physical and jamming attacks believed possible in the event of a nuclear war and to communicate through the surviving command structure to the remaining nuclear forces. The AFSATCOM transponders are hosted on various satellite systems such as the Satellite Data System and the FLTSATCOM. These provide polar and equatorial coverage respectively. AFSATCOM will provide message traffic for "force execution, force report back, and force redirection"²¹ by the use of short, low-speed, teletype messages. Not typically the system a JFSCC might employ but should be aware of and know where it fits into the satellite communication network.

The Satellite Data System (SDS) provides various capabilities because of its highly elliptical polar orbit much like that of the former Soviet Union's

Molniya satellites. The SDS allows communication coverage of the polar regions for the US strategic nuclear forces and "probably relay image data from various reconnaissance satellites."²² Also, the SDS provides "high-data rate communications links between the remote tracking stations of Thule, Greenland, and the Satellite Control Facility at Sunnyvale, California."²³

The Milstar system being developed is one of the most critical future command, control, communications, and intelligence (C3I) links in the satellite communications system. It is designed to control both "strategic and tactical forces and to relay intelligence information from spy satellites and other sources."²⁴ It is also being designed from the beginning to withstand the dangers of all-out war. Each satellite in the constellation will be interlinked and capable of nearly autonomous operation with onboard processing capability. Along with this greatly improved capability comes an increased price tag. Each satellite may cost close to \$1 billion dollars. "The primary communications payload will operate in the EHF range. It will also retain UHF capability to avoid obsoleting some \$2 billion worth of UHF terminals now in service."²⁵ These satellites will be in geosynchronous orbits and have an on-orbit spare to obviate the anti-satellite risks. This coming system will allow unprecedented C3I capability for the JFSCC of the future.

A JFSCC would receive the requirements for communications from the other subordinate commanders and confer with both USCINCSpace and other communications agencies to determine availability. Once availabilities are determined, the JFSCC, consulting with the JFC, would allocate and assign priorities to their force's frequency channels. This mediation would prevent or reduce back-channel requests and provide that important single point-of-contact (POC) for space communication support.

Navigation - The NAVSTAR Global Positioning System (GPS) is the satellite program that the DoD acquired to provide commanders and their troops with the capability to determine their position anywhere on the earth "within tens of feet, velocity within a fraction of a mile per hour, and time within a millionth of a second."²⁶ The GPS constellation, 21 operational satellites in six orbital planes with three on-orbit spares, should be complete in 1993. "US warfighting CINCs can hardly wait."²⁷ As General Moorman (AFSPACCOM/CC) said, "They realize the tremendous force-enhancement value of GPS."²⁸ This satellite system provides all types of users, both in the DoD and outside it, the capability to determine their location and speed on land, on the sea, and in the air. Three satellites are required for accurate two-dimensional fixing and four satellites are required for precise three-dimensional fixing. The civilian aviation industry is trying to go all-GPS and future Tomahawk sea-launched cruise missiles will be outfitted with GPS guidance systems instead of the "terrain-contour-mapping navigation system characteristic of all preceding Tomahawks."²⁹ All the receiver needs to do is push a few buttons to get the information he needs. Engineers are working to integrate receiving sets in every kind of vehicle and weapon system imaginable. The accuracy of the information received can be diminished by the DoD to allow the "friendly" troops to have only highly accurate position, speed, and time. This may conflict with the civilian use of this system in wartime. Five ground stations monitor and compare signals from the orbiting constellation. Air Force Space Command acts as the executive agent for the DoD in managing the GPS program. A JFSCC would only need to work through Air Force Space Command to coordinate the enhancement of the present constellation in his area of interest and deny the enemy accurate navigation information by altering the GPS signal for anyone other than

"friendly" forces. Once again he would provide the single POC in-theater for space navigation support. "GPS is a prime example of a subtle but profound shift in the way commanders have come to regard space systems in general - not just as stand-apart, above-the-battle force multipliers, but as organic to the fray, undeniably integral to forces and weapons."³⁰

Weather - The Defense Meteorological Satellite Program (DMSP) is the DoD's answer to Willard Scott. "Timely knowledge of weather conditions is of extreme importance in the planning and execution of military field operations."³¹ The DMSP program provides uniquely tailored weather information for the DoD. Other weather satellites provide information to the civilian community but the DMSP program looks at particular locations and at weapon related weather information in particular. Military commanders use this information to plan land, sea, and air strikes against their assigned targets. "The military has established firmly the importance of meteorological data from satellites in the effective and efficient conduct of military operations, and new applications continue to appear as the scope and quality of meteorological satellite data improve."³² Two satellites are the normal complement of the DMSP system and operate in a sun-synchronous near-polar orbit. The DMSP also provides information to the civilian community when possible making it a national asset. This might make the JFSCC's job more difficult if the satellite he needed for his conflict was also at the time providing hurricane coverage for the east coast of the United States. The JFSCC could provide the advocate in-theater for more DMSP support and be the go between for national commercial satellite support in case a DMSP bird developed problems.

Indications and Warning (I & W) - The satellite systems in this category include the Defense Support Program (DSP), Electronic Intelligence (ELINT)

systems, Signals Intelligence (SIGINT) systems, and Imagery Intelligence (IMINT) systems. All these systems are national assets and as such are controlled by various agencies and other DoD organizations. "The Defense Support Program is a key element of US strategic surveillance, designed to provide the earliest possible detection of a ballistic missile launch."³³ There are normally three satellites in the DSP system giving the minimum acceptable coverage against submarine ballistic missile launches. Control nodes for this system are worldwide. This program may be replaced in the future with a more capable system. The other systems sniff out the C³I capabilities of the enemy and provide intelligence and targeting information. Most of these systems are beyond the reach of anti-satellite weapons but low flying imagery reconnaissance satellites are extremely susceptible to counter measures. It is exactly the varied makeup of the I & W assets that makes having a JFSCC so important. A single fusion point for taking in requirements and allocating resources is indispensable.

The fact that numerous branches of the armed services and various government agencies and civilian organizations are users of the space force enhancement satellite system would tend to make one think that a JFSCC's job would be impossible. In fact, it makes it imperative that a JFSCC be appointed in the next confrontation. Rather than an ad hoc arrangement where everyone and his brother is calling up and asking for data channels, imagery, weather information, and better navigation coverage, having a single commander for satellite support and space control when that is possible makes more sense. Just like the JFACC, he would take all the requests from the other theater component commanders and coordinate with outside agencies to provide the maximum benefit with the least interruption to other services being provided. The trick is getting the CINCs convinced of

the utility of having a JFSCC. Looking back at some dated texts on the possibilities of using space resources to fight the next war sheds some interesting insights. From *The New High Ground*, "We've tried to educate, but the commands will not step up and say they need space support. For example, there was an argument once for conducting a Joint Chiefs of Staff [practice] operation without communications satellites. The JCS said, 'I can't do that, the operation won't be possible.'"³⁴ Is there justification for having a separate commander of space forces? Also from *The New High Ground*, "If the difference between the land and the sea and the air justify having a Navy and an Army and an Air Force, then there is justification for having a separate organization for space, for treating space as a separate arena of combat."³⁵ This was an attempt to justify the new Space Command but it is relevant as well to the need for a JFSCC. This "New High Ground" was espoused in 1983! Maybe the Grenada Operation, Just Cause, and more recently Desert Shield/Storm will provide some convincing evidence.

Recent Experiences

The Grenada operation, Just Cause in Panama, and Desert Shield/Storm are the first real acknowledgments of the importance of space assets to the accomplishment of the mission. Other actions have used space resources but not nearly to the extent of these most recent operations. "Just Cause was a showcase for just about all types of space resources."³⁶ In Grenada and Desert Shield/Storm, it was a come-as-you-are party and the amount of support from space was drawn together from scratch. "Desert Storm was an eye-opener for the combat arms of all the services on the importance of space as a force multiplier."³⁷ Of course, some of these systems such as the GPS were not available until the Desert Storm time frame and the desert was uniquely suited to make their use impressive.

Grenada is particularly important as a baseline to show how disjointed the improper and uncoordinated use of space can be. Lack of interoperability was the name of the game and Grenada was the showroom. Most have heard the story of the Marine using his credit card to phone home in order to call up an air strike. Command and control relationships between the Army, Navy, and Marines were difficult enough without adding the lack of communications capability. Satellite communications were primarily used to report up and down stream at the higher levels. Weather information from satellites was used. IMINT, SIGINT, and ELINT satellites certainly played a large role. IMINT was extremely important since up to date maps did not exist for the US forces and locally produced maps were used. The GPS system was not ready to be used at that time. All of these uses of space showed an extremely immature appreciation for the use of space to the warfighting CINC. Many lessons were learned from that experience and were applied in Desert Shield/Storm.

"Space came into its own in Desert Storm," said Secretary of the Air Force Donald B. Rice in a May 7 speech to the Washington Strategy Seminar on Capitol Hill. "From the invasion of Kuwait to its liberation, the showdown was a prism into space systems' support for battle managers. All U.S. satellites that could contribute - several dozen in total - did so, providing information of all kinds."³⁸

There are numerous instances of highly imaginative and carefully thought out uses of space to act as a force multiplier in Desert Shield/Storm. It appears that in most of the cases the solutions to the various problems were ad hoc arrangements and not coordinated actions. I will use the same areas of communications, navigation, weather, and I & W to illustrate the success of using space on the modern battlefield. Who knows how it would have worked if it had been integrated and coordinated by a JFSOC?

Again from Secretary of the Air Force, Donald B. Rice, "At the height of hostilities, 85 percent of communications was via military satellites."³⁹ But there is never enough capacity to satisfy all the requirements. "Naval Space Command and the Marine Air Wing in Saudi Arabia used a small experimental satellite to relay logistics data back to the United States."⁴⁰ Half of the communications traffic in the build up stages of Desert Shield had to be routed via commercial satellites.⁴¹ One of the DSCS II satellites being held in reserve was brought to life and moved to a position in the geosynchronous belt above the Indian Ocean where it would provide communications capabilities to the theater of operations. "The feat was historic - the first ever repositioning of a satellite to support US combat operations."⁴² It took three satellites, two DSCS II's and a DSCS III, but "the Defense Communications Agency (DCA) was able to allocate sufficient channels and bandwidth to support [all] tactical terminals for the duration of the conflict," General Moorman explains.⁴³ This marked the first time that satellites were primarily used for inter-theater communications and also for intra-theater as well. This harks back to Secretary Rices' comments at the beginning of this paragraph. In the opinion of General Colin Powell, Chairman of the Joint Chiefs of Staff, "Satellites were the single most important factor that enabled us to build our command, control, and communications network."⁴⁴

The Global Navigation System was another star of Desert Shield/Storm. With only 16 of the satellites in orbit, the system provided three-dimensional coverage for 20-to-22-hours-a-day and two-dimensional coverage for 24-hours-a-day.⁴⁵ Three-dimensional coverage was extremely important to the air force contingent. "The war began with several hundred

GPS receivers in theater and ended with 4,500,' Secretary Rice said."⁴⁶ There were instances of tank commanders passing the hat around and using personal charge cards to purchase GPS receivers. Another instance of heroic effort on part of the unseen operators of these space systems went on at Falcon Air Force Station. They recovered an experimental satellite that had been given up in orbit, resurrected it through the use of clever computer manipulation and made it capable of providing the badly needed three-dimensional coverage.

The Defense Meteorological Satellite Program turned out to be needed more than was expected. No one realized that the worst weather in fourteen years was going to hit when the war began. "During the allied buildup, the Air Force decided to expedite its long-planned 'replenishment launch' of a DMSP satellite to augment two others on orbit."⁴⁷ This satellite supplemented the two already in orbit. And it was a good thing it did. With three satellites in orbit, weather to the battle staff was updated every four hours. If only two satellites had been on orbit, the weather information would have been refreshed every six hours. This up-to-date information was highly important to keep the tempo of the air operations at a high level. On many occasions, strikes against one target were reassigned to another because of the excellent weather information. The ability to pick target areas and optimize the precision guided munition needed based on weather considerations was critical to the success of the air campaign. Another innovation created for Desert Storm was the Rapid Deployment Imagery Terminal (RDIT) that was Humvee portable and permitted the display of DMSP imagery directly to the on-scene commander.

The area of Intelligence and Warning was significant to the war effort and was highlighted in the areas of Scud hunting and battle damage

assessment. The full story of the SIGINT and ELINT effort will probably remain highly classified for some time to come. Most are aware of the possible role that the DSP satellites played in the Scud hunting role. Their sensitivity to ballistic missile launches made them invaluable tools in the Scud hunting and Scud warning mission they were given. This Strategic Defense Initiative type mission was lashed together in a remarkably short time. Said General Moorman, "The warning systems served to contain the conflict, and they clearly enhanced our Patriot missile defense."⁴⁸ "During the Persian Gulf war, two of them [DSP] could generally locate a Scud launch plume within 120 seconds of firing. Location was not nearly precise enough to alert the targets and Patriot missiles protecting them."⁴⁹ This was done with the use of the lowly telephone over satellite communications but not with a high tech computer aided reporting system. There was no JFSCC to coordinate this operation and it was created out of necessity through the hard work of smart individuals. Who knows what would have been possible if General Schwarzkopf had appointed a JFSCC to coordinate his use of space assets and had practiced this coordination in a large scale exercise previously. Clearly, it was accomplished with the ingenuity of many individuals and military and civilian commands but isn't there an easier way? What must happen first is a recognition of space as a unique and important war-fighting arena. Secondly, the CINCs must understand that their command of space forces is every bit as important as the command of their more traditional forces on the land, the sea, and in the air.

It would seem appropriate at this point to guess at who this JFSCC might be. Of course, it is up to the CINC to set up his organization the way he wants as we've seen previously but several models come to mind. One might be the Air Force component commander of USSPACECOM. This would put

him at the level of the other major subordinate commanders. A second model would put an O-6 such as the 2nd Space Wing/CC in charge of a unit like the Special Operations Command had on CENTCOM's staff. The third method is that of a liaison team from USSPACECOM with various experts on the space systems. All of these could be made to work as not having any of them was forced to work but the first method is probably the best. AFSPACECOM/CC is a three star billet and since the Air Force manages 90% of the space systems he is already aware of the various assets. His close working relationship with USCINCSpace would be a benefit since that is who the JFSCC would be coordinating with most often. If the 2nd regional conflict should break out, the AFSPACECOM/DO could be the JFSCC of the smaller conflict.

Conclusions

It is hard to imagine another conflict without the use of space systems to act as a force multiplier. What should be difficult to imagine is the next conflict without a JFSCC to coordinate the use of those space forces to wage the most efficient and economical space war against the next enemy. That space capabilities are crucial to war fighting goes without saying. But it is possible to find high ranking officer after officer and high ranking official after official who will say that space forces are crucial to our warfighting efforts and then not know how best to employ those forces. Much needs to be done to create joint doctrine for the use of space forces in the support of theater operations. The CINCs need to understand that space is as unique a warfighting medium as the earth, water, and the air. They should have learned from Desert Storm the utility of a Joint Force Air Component Commander and be able to apply that lesson to space forces. As General Moorman stated,

"In a multipolar world, a world of diverse threats, our demands for global information will be much more intense. The forces we deploy will require the traditional kinds of support: communications, navigation, intelligence, weather reports. We'll have fewer places overseas from which to collect that kind of information. But space systems will be on the scene, already there, everywhere, to provide it."⁵⁰

Will there be someone of General Moorman's capabilities to act as the next JFSCC and to use those space capabilities? The author hopes so. It is both appropriate and timely for the next conflict of any size employing subordinate commanders to also have a JFSCC. The CINCs need to be educated as to the best use of their space assets and how a JFSCC could make that task easier. Hopefully, it will not take as long to learn to use space assets to fight wars as it has taken to learn to use the Air Force successfully.

NOTES

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